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FACTORS TO BE CONSIDERED WHEN DEVELOPING A GROUNDWATER USE RESTRICTION ORDINANCE TO SERVE AS AN INSTITUTIONAL CONTROL ORDER UNDER PART 201 AND/OR PART 213

INTRODUCTION

Part 201, Environmental Remediation, and Part 213, Leaking Underground Storage Tanks, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, and the Part 201 Administrative Rules, allow for remedial action plans (RAPs), interim responses designed to meet criteria (IRDC), and corrective action plans (CAPs) that rely on institutional controls (ICs) to restrict exposure to hazardous substances. A local ordinance (LO) is one form of IC. The hazardous substance exposure most commonly controlled through local ordinance is groundwater ingestion (i.e., use of groundwater for drinking water). This document deals with groundwater use restrictions, focusing on drinking water uses, and does not cover the entire range of exposure controls that could be accomplished by IC.

This document, the accompanying checklist (Attachment A) and example LO (Attachment B), have been prepared by the Department of Environmental Quality (DEQ) to assist two audiences:

- Persons preparing or reviewing a RAP, IRDC, or CAP.
- Local units of government that are considering enactment of ordinances that restrict groundwater use.

These documents are not a comprehensive list of all elements or issues that may need to be addressed on a site-specific basis in a RAP, IRDC, or CAP, but rather, are intended to be a guide for ensuring that RAPs, IRDCs, and CAPs that include an LO will reliably restrict exposure to hazardous substances. With regard to actions being considered by local units of government, this document and the checklist are intended to raise issues that should be thoroughly considered in formulating an ordinance in order to assure that the ordinance meets its objectives and does not have unintended consequences.

The accompanying checklist is used by DEQ staff in reviewing groundwater use restriction ordinances that are proposed as ICs. The checklist is provided to persons preparing RAPs, IRDCs, and CAPs, and to local units of government, to assist them in understanding the factors considered by DEQ in determining if an LO is adequate.

The accompanying example ordinance is designed as a template for use by a local unit of government that is dealing with a simple case. It must be adapted to the format and other needs of each LUG. The example ordinance does not anticipate all circumstances that may need be accounted for in a LO (e.g.,

restricting use of only certain aquifers). Use of this template does not assure that the DEQ will approve an LO as an acceptable IC.

It is the responsibility of the person seeking approval of any IC, including an LO, to provide sufficient information to the DEQ for the department to determine if the IC is adequate.

General Considerations

The DEQ does not encourage or discourage local units of government to enact an ordinance as an institutional control (unless the DEQ is conducting a cleanup, in which case it may approach a local unit of government). It is up to the community to determine if enacting a groundwater use restriction ordinance is in its best interests. A local unit of government that is considering an LO, or has been asked by a person conducting a cleanup to enact an LO, is encouraged to contact the appropriate DEQ Division as early in the process as possible to facilitate communication about the issues involved with LO development.

The DEQ will not review an LO proposed by a person conducting a cleanup unless the local unit of government is involved in the review process.

The DEQ can only recognize an LO as "acceptable" in the context of a specific RAP, IRDC, or CAP. Before the DEQ can approve an LO or other IC, it must make a finding that it is impractical to accomplish the necessary use restrictions through restrictive covenants. The person proposing an IC to the DEQ must generally document what efforts have been made to secure the necessary restrictive covenants, including offers of reasonable compensation to the affected property owners. The DEQ will review this information to determine if it is impractical to secure deed restrictions. In a case where a large number of properties is affected (e.g., more than 20), the DEQ will not require that the liable party contact each property owner before seeking approval of an IC.

If the DEQ has determined that the impracticality test has been met, Parts 201 and 213 require the department to determine, on a facility-by-facility basis, whether a local ordinance is reliable and effective in controlling exposure to groundwater at a particular location. The DEQ will determine whether the ordinance is effective in eliminating unacceptable risks in each relevant exposure pathway, depending on the concentration of hazardous substances present in the groundwater, the different ways that exposure to those contaminants may occur, and the scope of restrictions in the ordinance. A risk or exposure is unacceptable if an actual or reasonably foreseeable future exposure to hazardous substances will occur at concentrations exceeding applicable criteria. If there are unacceptable exposures that are not adequately controlled by the LO, the RAP, IRDC, or CAP must provide for other means of eliminating the unacceptable exposures. When the DEQ undertakes a review of a draft

ordinance prior to a full analysis of all of the various exposure control options available under Parts 201 and 213, that review should not be taken as an indication that using an IC has already been chosen as the preferred remedy at any particular facility.

Technical Considerations

The area covered by the ordinance must be clearly delineated, in both vertical and horizontal dimensions. In cases where there is more than one water-bearing formation under the property, the ordinance must indicate whether all or only certain formations are covered by the restriction(s). When making that decision, consideration should be given to the importance of the unimpacted aquifer(s) (i.e. is an aquifer the community's only source of water for its municipal supply?) and the likelihood that the unimpacted aquifer may be contaminated by drilling through the contaminated aquifer to install a well in a deeper, uncontaminated aquifer. There are well construction techniques that can prevent this type of cross-contamination from occurring, but the ability of a LUG to effectively oversee these drilling activities to assure that these techniques are properly carried out should be factored into its decision about how extensively to apply restrictions under the ordinance.

The area covered by the ordinance must consider contaminant migration and the influence and potential exposures related to nearby water withdrawals. The restricted area must include the current plume, the anticipated area of plume expansion (if applicable), and often may require a buffer zone. The size of the buffer zone will be determined by the DEQ on a facility-specific basis using professional judgment and considering the rate of groundwater movement, the concentration gradients in the plume, uncertainties in facility characterization, and the potential exposure that could occur under various withdrawal scenarios. There may be situations where more than one buffer zone boundary will need to be established at a facility. This can occur when there is the potential for more than one pumping rate or withdrawal volume to be applied to the aquifer. The DEQ views a buffer zone as necessary in most cases to assure reliable restriction of unacceptable exposures, since there is some degree of uncertainty associated with most site characterization work. If fate and transport models are used to predict migration, sufficient environmental monitoring must be conducted to confirm the validity of those predictions.

The area covered by use restrictions must be identified on a map of appropriate scale, and be based on reproducible, unambiguous boundaries. The map must be part of the ordinance. A map is not required, however, if LO restrictions apply throughout an entire jurisdiction (e.g., city).

The current and potential uses of groundwater being restricted must be clearly identified. This is most effectively done by identifying both prohibited uses and allowable uses. The DEQ's experience has shown that a total prohibition on groundwater use is seldom practical. This is more true as the size of the restricted area increases. At a minimum, exceptions that allow for groundwater monitoring wells must be provided. Exceptions to allow for construction dewatering wells and wells used for nonconsumptive purposes such as irrigation are often prudent, provided that these wells do not result in the exacerbation of the contaminant plume. Exceptions for dewatering wells must be conditioned on the proper handling and disposal of the water that is removed. It is helpful for prohibited and allowed uses to be reviewed in relation to the exposure pathways that are considered under Parts 201 and 213 (e.g., ingestion, dermal contact, etc.)

A large number of exceptions and exceptions that have a high potential for exposures or that require a large degree of geological review, should be avoided. Exceptions that require a significant hydro geological review should also contain a process and identify resources for developing that information. Ordinances should be crafted to minimize the number of exceptions that rely on future determination that will need to be made. Allowing for a significant number of potential future determinations decreases the reliability and effectiveness of the ordinance and may prohibit approval of the ordinance as an exposure control. The burden for future determinations, if it is necessary to include any, should be placed on an entity that is qualified to make the necessary technical judgments and who will be objective (e.g. an environmental consulting firm engaged by the village). The firm should be required to provide and maintain documentation of their qualifications.

When reviewing the uses of groundwater that are allowable under a proposed LO, the DEQ will consider whether those uses may render the LO ineffective in controlling exposure, and whether those uses could affect the plume in a way that makes it reasonably possible to predict plume behavior over time. Certain uses, such as agricultural or golf course irrigation or large volume cooling water withdrawals, make it more difficult to predict the future of a groundwater contaminant plume. While the DEQ may accept an LO even if all potential exacerbating uses are not prohibited, local officials should consider the consequence of groundwater contamination on other activities, even if those activities will not result in exposure to the contaminated groundwater. For example, a plume that is allowed to remain in place under an LO may be affected by a golf course irrigation well or industrial cooling water well that is located outside area where drinking water uses are prohibited. The person who operates that well may be liable for costs of exacerbating the groundwater contamination or for damages under common law. Local officials must balance the needs of all groundwater users in an area when considering groundwater use restrictions, even in a limited area.

The accompanying checklist includes a number of groundwater uses and activities that can result in exposure to groundwater. These lists of uses and activities may not be comprehensive, but should be useful to persons considering the utility of an LO for a given area.

Legal Considerations

The ordinance must include a statement indicating that its purpose is to protect the public health, safety and welfare, and that the ordinance has been enacted, in part, as a response to groundwater contamination. It may be advisable for the local unit of government to develop and maintain an administrative record documenting how the restrictions relate to the protection of health, safety and welfare in case the legality of the ordinance is subsequently challenged.

The community, through its appropriate governing body, must officially certify that the ordinance has been properly adopted according to the local government's own procedures. This includes authority, public notice requirements, etc. The DEQ will rely upon the certification unless there are obvious deficiencies in procedure or authority.

Information must be provided to explain how compliance with the ordinance will be monitored and enforced. Simply having an ordinance is not sufficient. It must be effectively enforced. The DEQ will rely on the representation of the local governing body that compliance with the ordinance will be monitored and effectively enforced, unless information to the contrary is brought to the attention of the DEQ. The LO must specify who has enforcement authority and the enforcement tools available to assure compliance with the LO.

Part 201 requires that an ordinance be "published and maintained in the same manner as a zoning ordinance." This must be confirmed in writing by an appropriate local official (e.g., clerk's office). The concern to be addressed is that the public have sufficient access to the ordinance to know whether property they own or occupy (or that they are considering acquiring) is affected by it. In addition, the reliability of the ordinance will often hinge on the acceptability and level of awareness of those persons whose property is affected by the groundwater use restriction. For this reason, the DEQ suggests that in addition to the LUG following its zoning ordinance process, that it also sends notice to all owners of parcels of land that will be included in the use restriction area.
Part 213 has a statutory requirement that the ordinance be filed with the register of deed as an ordinance affecting multiple properties.

Under both Part 201 and Part 213, the ordinance must state that the community will notify the DEQ at least thirty (30) days prior to modifying or revoking the ordinance or allowing it to lapse (e.g., under "sunset" provisions). This notice

should be provided by registered mail to the Director of the DEQ. Revocation or significant modification of an ordinance that is being relied upon to impose necessary use restrictions in a DEQ-approved RAP, IRDC, or CAP would immediately invalidate our Department's approval of the RAP, IRDC, or CAP. Additional response activity may be required of the person whose RAP, IRDC, or CAP relied on the LO.

Example Scenarios

A local unit of government may be developing a groundwater use restriction ordinance in one of three situations:

1. To address known groundwater contamination in a specific, well defined area. In this case, data from a draft RAP, IRDC, or CAP may be used to define the area where use restrictions are required.

2. To address one or more specific known sites, but also to impose restrictions in anticipation of the need for control on the use of groundwater in a larger area. The RAP(s)/IRDC(s)/CAP(s) may be available to define part of the need, but the larger area potentially needing use control may not be well defined.

3. To deal with general, area wide groundwater contamination problems, none or few of which are well defined. This approach may be desirable to a community that wishes to, and is able to, make presumptive decisions. Each RAP, IRDC, or CAP still requires DEQ approval if it relies on an LO that is enacted to address a large area.

Consider two examples:

First, consider a RAP that provides the following information. Groundwater at the facility is known to be contaminated with benzene at up to 25 parts per billion (ppb) in an area 800' wide and 2500' long. The plume is stable and will not expand in the future. Soil contamination has been reduced to acceptable levels in all areas of the facility. There is only one aquifer at the site. A survey was conducted of all property owners and occupants in the area of the plume to confirm that no groundwater use is occurring (no drinking water wells, no irrigation wells, and no commercial or industrial supply wells). Municipal water is used by all homes and businesses in the area of the plume. A local ordinance prohibits the use of groundwater for drinking water wells. In this case, the local ordinance would be an acceptable exposure control, since the only exposure pathway that would have an unacceptable risk from benzene at 25 ppb is ingestion (drinking water).

In contrast, consider the same facility, but assume benzene concentrations are up to 25,000 ppb in groundwater in a portion of the plume, and that the plume is expected to stabilize with concentrations as high as 10,000 ppb in an area 400' by 750', however, the exact distribution of benzene concentration in the stabilized plume cannot be precisely determined. Again, a local ordinance prohibits drinking and other domestic uses. This ordinance alone is not sufficient to control potential unacceptable exposures, since the existing and projected benzene concentrations pose unacceptable risks via inhalation of vapors in basements, through direct contact with groundwater, and as a result of venting into a very small stream adjacent to the facility. Therefore, approval of a RAP, IRDC, or CAP for this facility must include other exposure controls in addition to the LO.

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